Amphibious Sealift Support R&D Program Update

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AGENDA

- IMPROVED NAVY LIGHTERAGE SYSTEM (INLS)
  - INLS PROGRAM HISTORY
  - SUMMARY OF INLS R&D TESTING
  - INLS PROGRAM DESCRIPTION
  - INLS PROCUREMENT PLAN
  - INLS MILESTONE SCHEDULE
- LIGHTERAGE SUPPORT CRAFT

INLS PROGRAM HISTORY

- ACTD History (Joint Modular Lighterage System,(JMLS)
  - OSD Sponsored With Army/Navy to Address Defense Planning Guidance SS3 Requirements (1997-2000)
  - Prototype System Manufactured to Support Army Intermodal Requirement
  - At Sea Tests Identified System Deficiencies:
    - Weight
    - Stability
    - Safety
  - ACTD Ended Dec 2000
  - Army/Navy Agreement to Redesign to Wider/Longer Platform and Continue R&D Effort

INLS PROGRAM HISTORY

- ACTD History (JMLS) Cont'd
  - In Aug 00, IOC Changed From FY2003 to FY2005
  - Army Withdrew From JMLS in Aug 01, Navy Continued With R&D
  - PR03 Removed Procurement Funding for SS3 System (Sep 01)
  - Minimal FY03 Procurement Funding Retained to Recapitalize Legacy System (NL)
- Navy Recapitalization Validated Need to Replace System
- Out Year Procurement Funding Reestablished
  - Decision Made to Procure Improved Navy Lighterage System
  - At Sea Prototype Testing Conducted in Spring 2001 and Again in Summer of 2002 to Validate Technical Concepts.

SUMMARY OF R&D AT SEA TESTING

- Prototype Testing Conducted in Little Creek Va.
- Testing Focused On:
  - Rigid and Flexible Connectors
  - End To End and Side To Side Connections
  - Deck and Hogging In Winches
  - Handling and Stability
  - Deck Jewelry
  - Composite Materials
  - Fendering
- Testing Resulted in Several Major Changes to System Configuration

SUMMARY OF R&D AT SEA TESTING

- Major Changes to System Configuration
  - Rigid End Connector Eliminated
  - Male/Female Combination Modules Eliminated
  - New Combination Module
  - Reduced Number of Modules Requiring Side to Side Connection
    - Side Connectors Reduced From 6 to 4 Per Side
    - Side Connector Procurement Separated From RFP
    - Will Be Provided As GFE to Assist in Testing

SUMMARY OF R&D AT SEA TESTING

- Major Changes to System Configuration Cont.
  - Main Winch Prime Mover Located Below Deck
  - Additional Deck Jewelry
  - Unhanded Flexible Connector System
    - Shear Connector
    - Automated Flexor Assembly (Male)
    - Flexor Housing (Female)
  - Warping Tug Modifications

PROGRAM DESCRIPTION

- The INLS Program Will Develop and Deploy an Improved Lighterage System Which Will Be Used to Offload Vehicles and Cargo Containers From Ships at Anchor.
- The System Consists of Powered and Non-powered Floating Barges, Nominally 24’ Wide by 80’ Long by 8’ Deep, That Can Be Assembled Into the Following Platforms:
  - Warping Tug (WT)
  - Roll-on/roll-off Discharge Facility (RRDF)
  - Causeway Ferry (CF)
  - Floating Causeway (FC)
- The System Will Draw Heavily on the Current Commercial Tugboat and Barge Ferry Technology

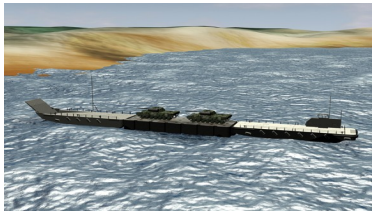
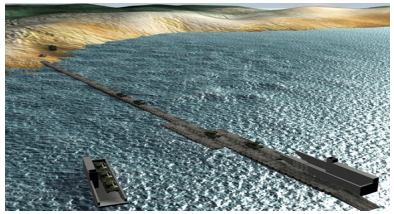
KEY PERFORMANCE PARAMETERS

KPP	Threshold	Objective
Ready to Operate		
WT	1.5 hr	1 hr
RRDF	36 hr	24 hr
CF	3 hr	2 hr
FC	48 hr	36 hr
Speed		
WT	8 knots	10 knots
CF	8 knots	10 knots
Operations		
WT	Extract a fully loaded CF from beach in 30 min	Extract a fully loaded CF from beach in 20 min
CF	Beach and extract fully loaded in MSI:9 on a beach gradient of 1:50	Beach and extract fully loaded in MSI:11 on a beach gradient of 1:100

WEIGHT REQUIREMNTS

- Weight Limitation Driven by MPF Ship Crane Capacity
- Weight Limitation for Fully Fitted-out Module:
  - WT/CPFM: 115 Lt
  - CF Bow Ramp Module: 81 LT
  - Combination Module: 83 LT
  - Intermediate Module: 70 LT
  - Ramp Module: 69 LT
- Each Prospective Bidder Will Be Required to Submit a Independent Weight Estimate With Their Proposal.

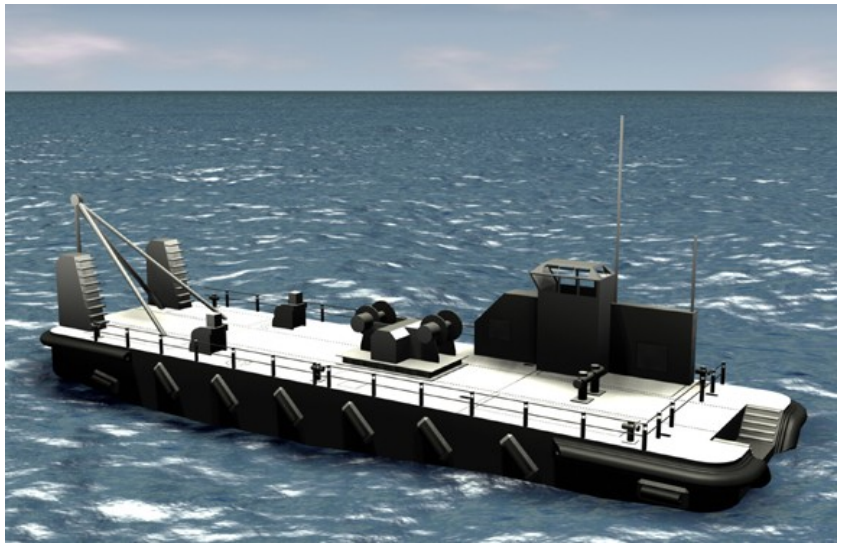
SYSTEM COMPARISION

	Warping Tug	Causeway Ferry	Roll On/Roll Off Discharge Facility	Floating Causeway
NL				
INLS				

WARPING TUG

Assemble sub-systems, towing, anchoring, and salvage operations

NL SLWT
- 7 knots
- Sea State 2

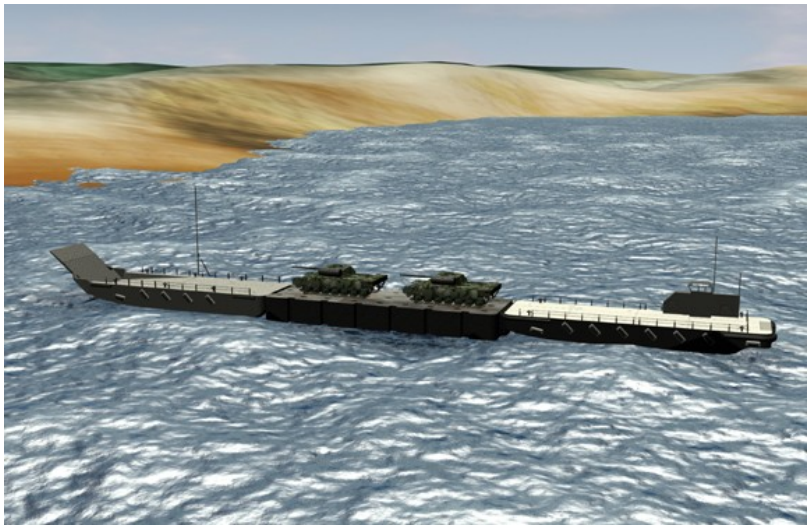


INLS WT
- 10 knots
- Operate Sea State 4
- Survive Sea State 5

CAUSEWAY FERRY

Transport Cargo From Ship to Shore/floating Causeway

NL CF



INLS CF

-10 knots
- Operate Sea State 3
- Survive Sea State 4
- Increased Cargo Capacity

ROLL ON/ROLL OFF DISCHARGE FACILITY

NL RRDF

Interface with Military Prepositioning Force ships for offload of rolling stock with Navy lighterage.

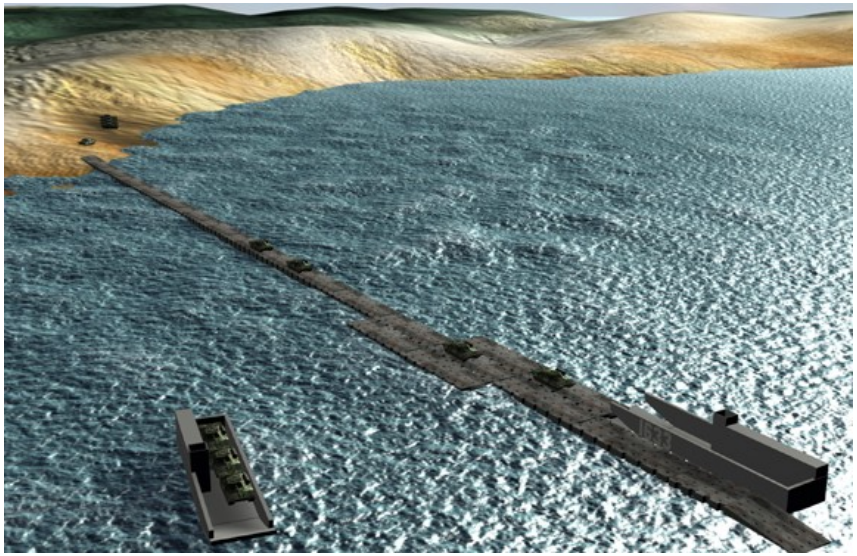
INLS RRDF

FLOATING CAUSEWAY

NL ADMIN PIER

Navy FC/admin Pier:
Mooring of Lighterage/crew Changes

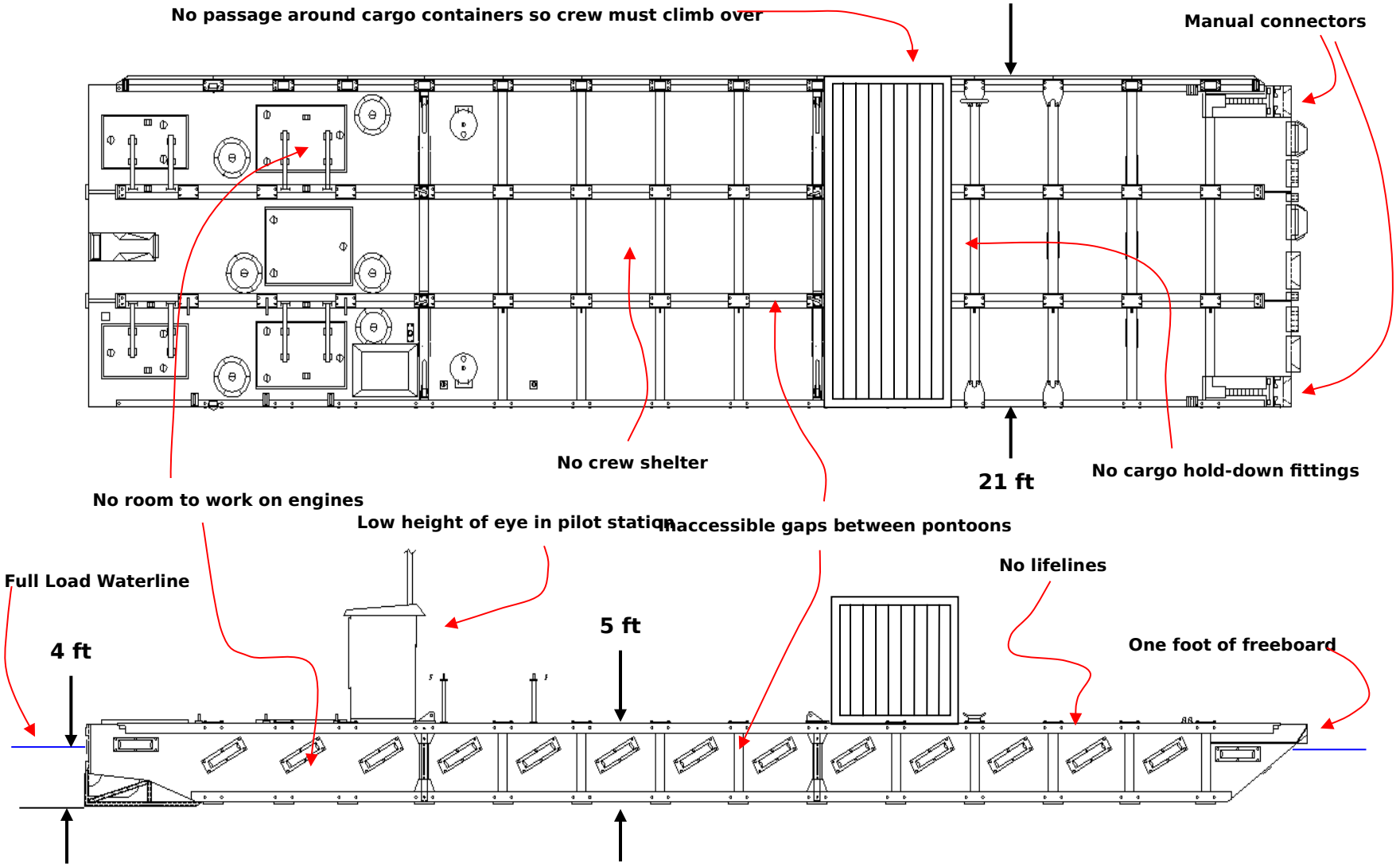
- 1200 Ft. Long



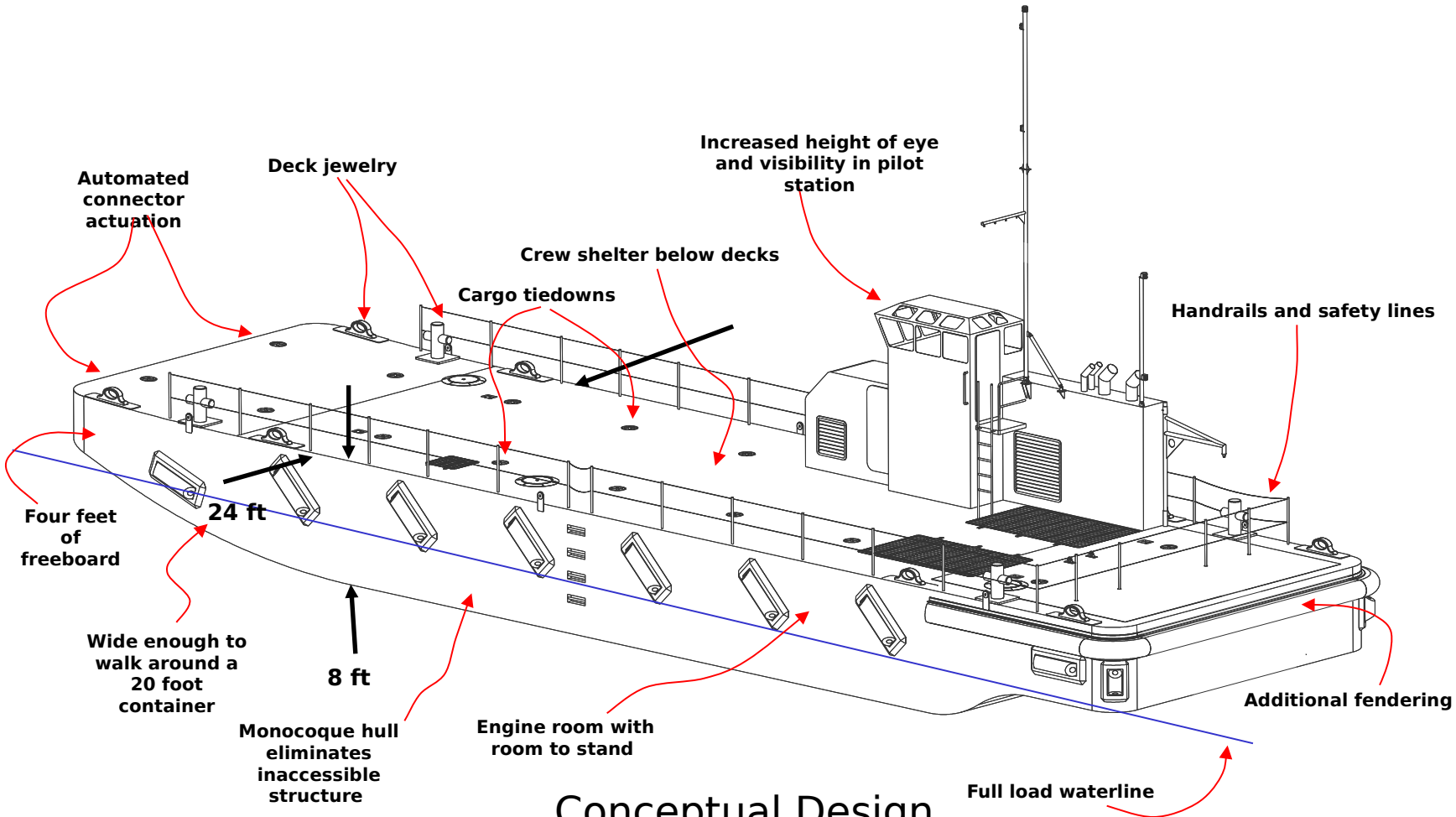
INLS FC

Anchored Non-powered Floating Pier Used To Interface With Lighterage And Other Support Craft For Offload Of Rolling Stock And Cargo

DEFECTS OF NL CFPM

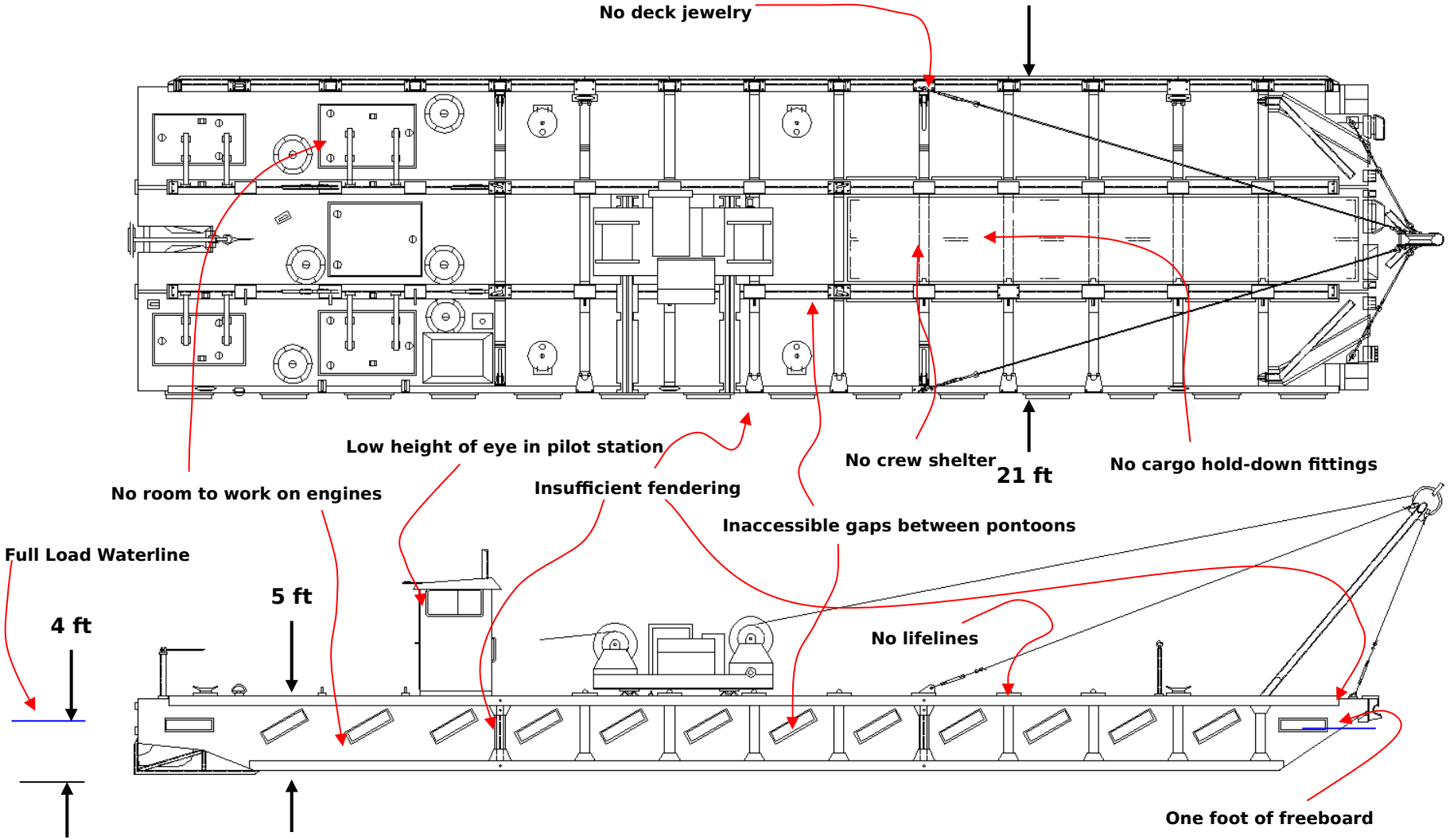


FEATURES OF INLS CFPM

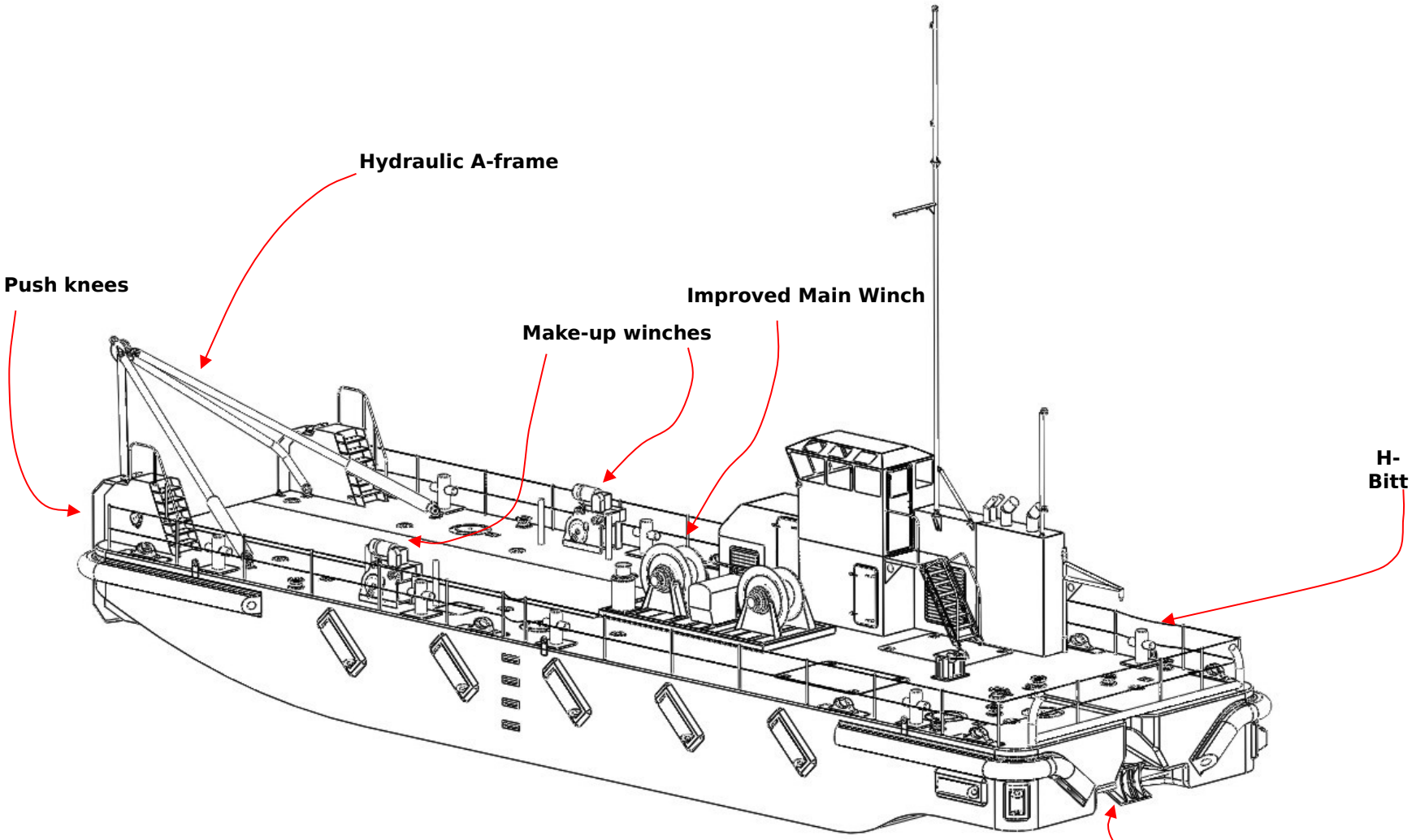

Automated connector actuation
Deck jewelry
Increased height of eye and visibility in pilot station
Crew shelter below decks
Cargo tiedowns
Handrails and safety lines
Four feet of freeboard
24 ft
Wide enough to walk around a 20 foot container
8 ft
Monocoque hull eliminates inaccessible structure
Engine room with room to stand
Additional fendering
Full load waterline

Conceptual Design

DEFECTS OF NL SLWT

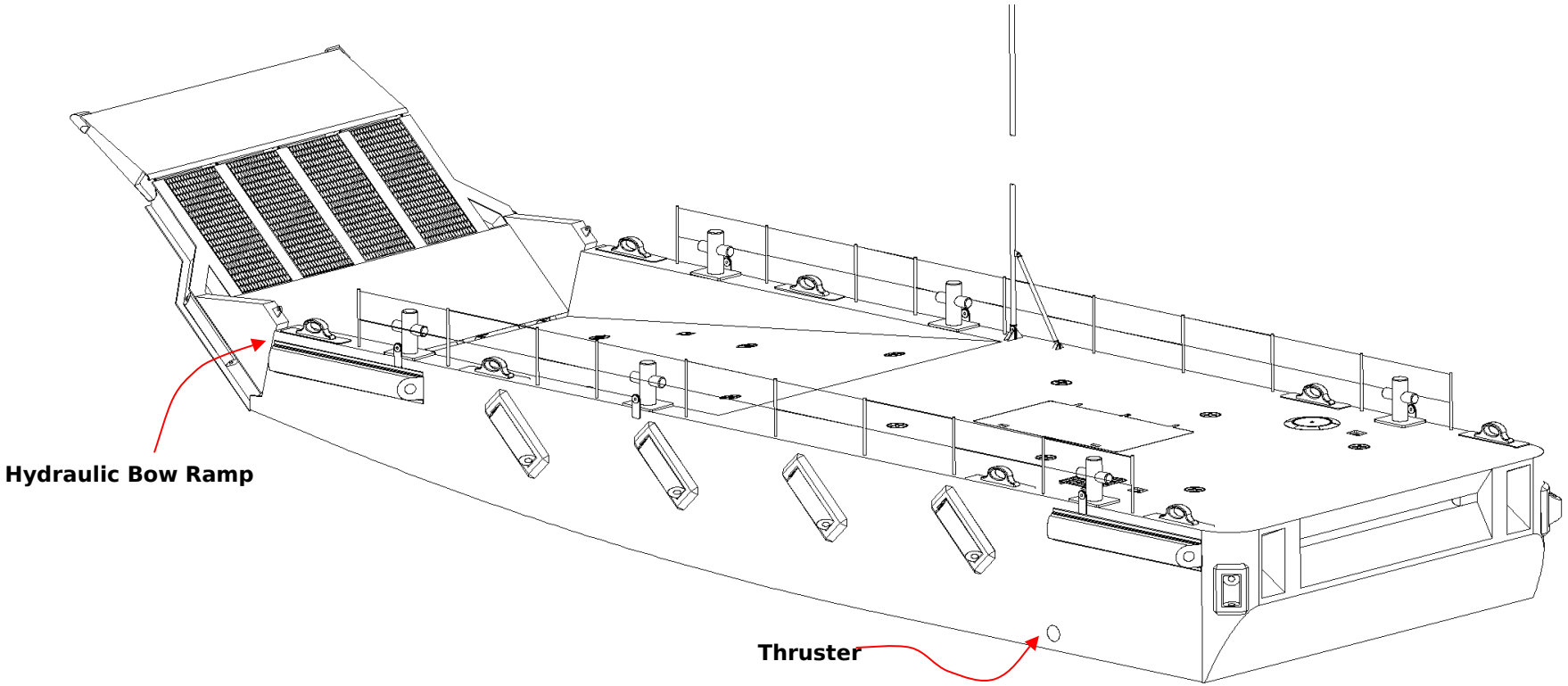


INLS WARPING TUG



Conceptual Design

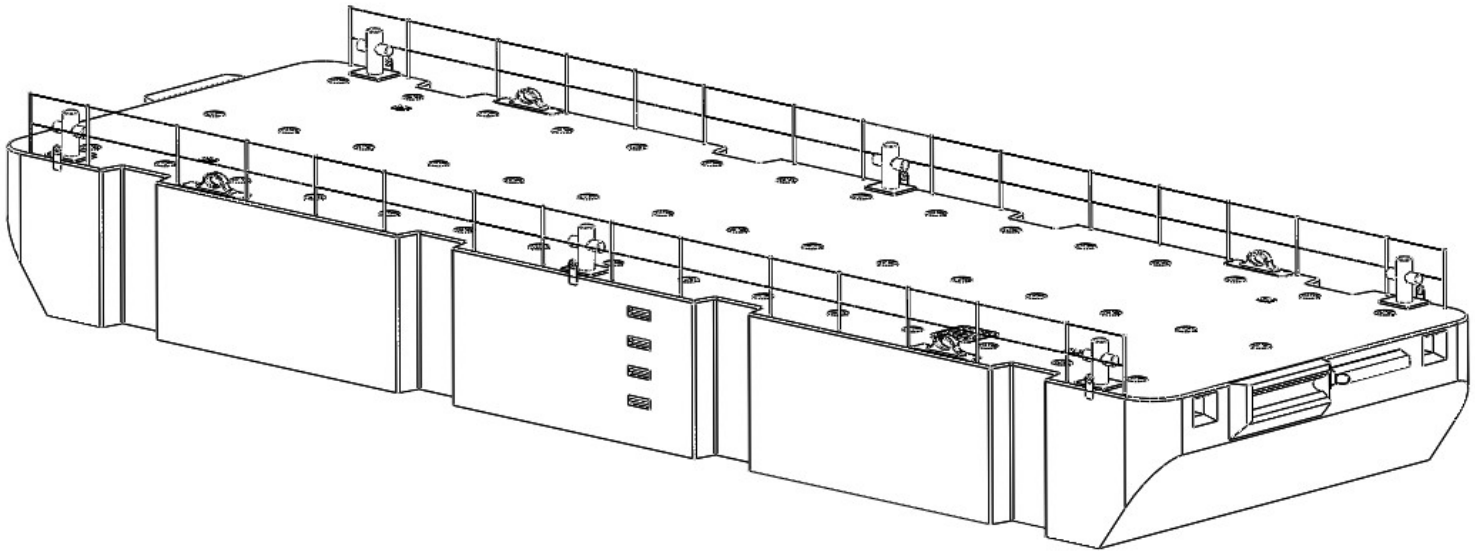
BEACH MODULE



Conceptual Design

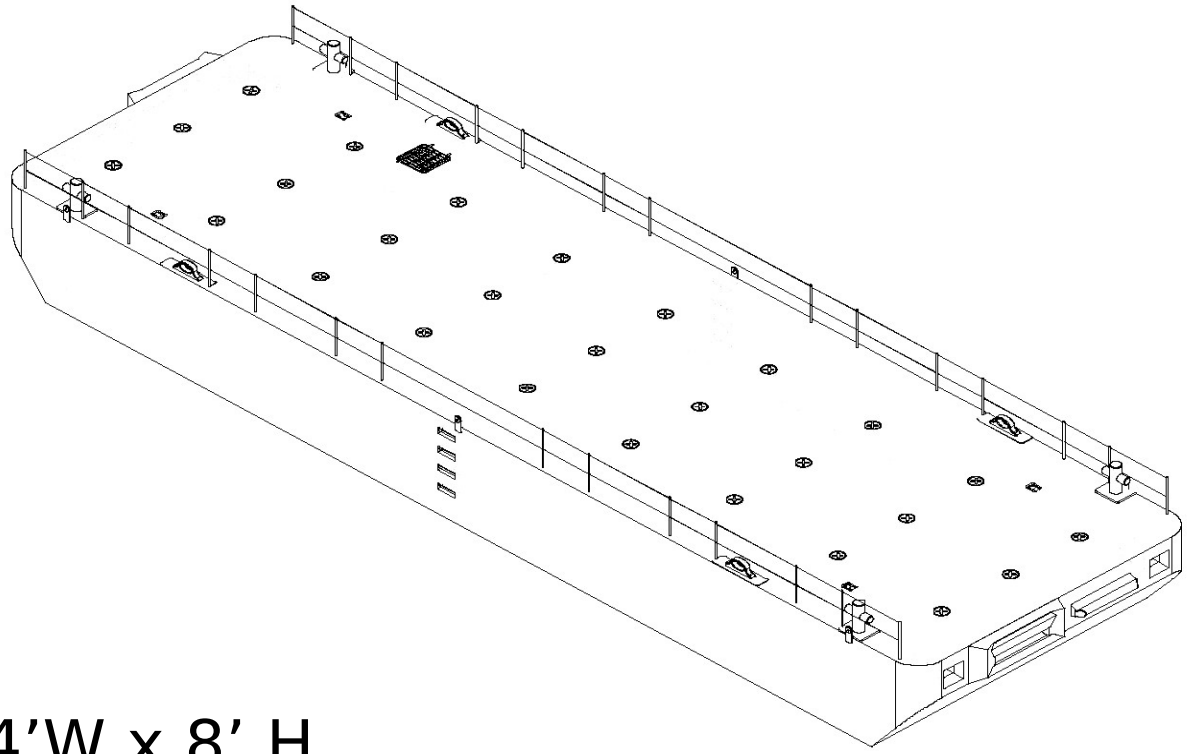
NOTCHED COMBINATION MODULE

Required for the



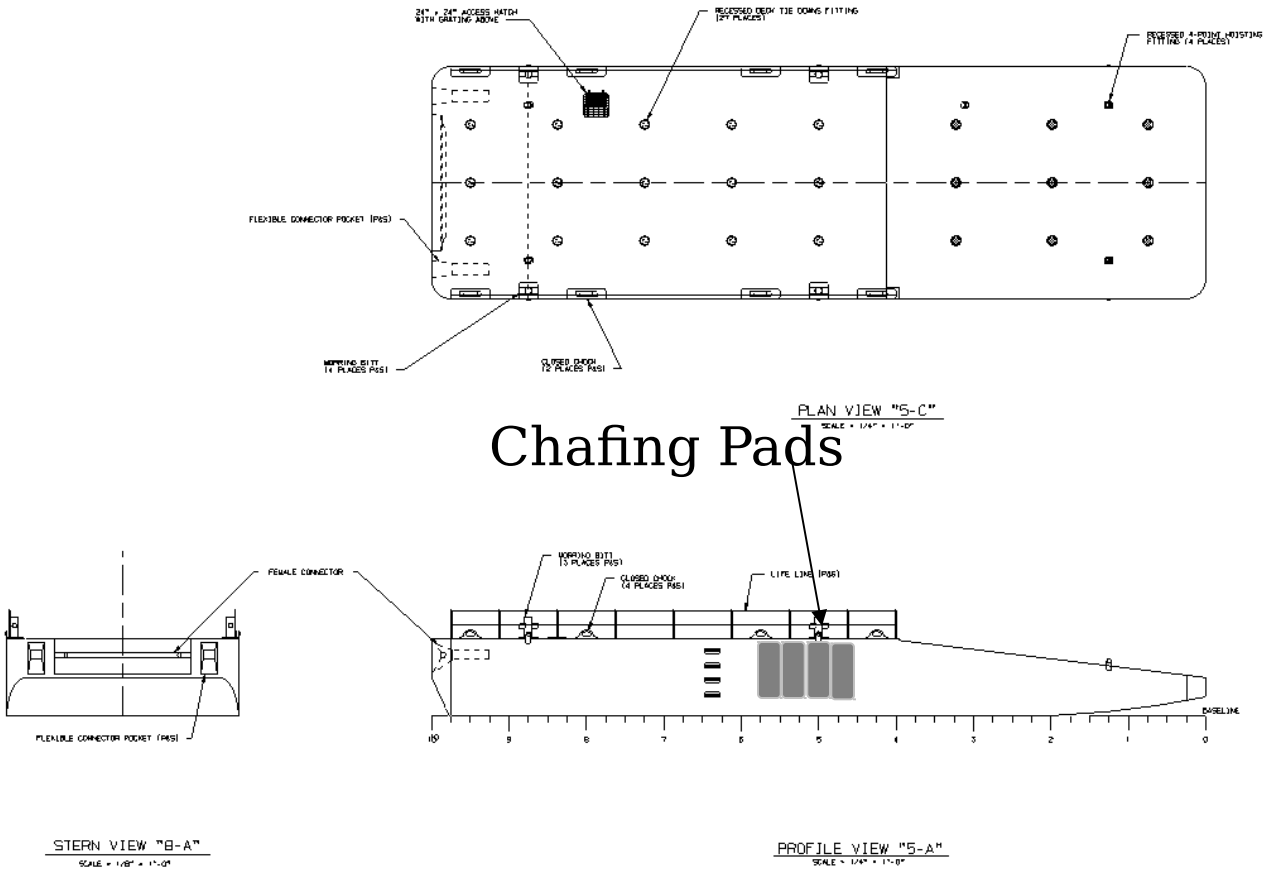
80’ L x 24’W x 8’ H

INTERMEDIATE MODULE



80’ L x 24’W x 8’ H

RAMP END MODULE

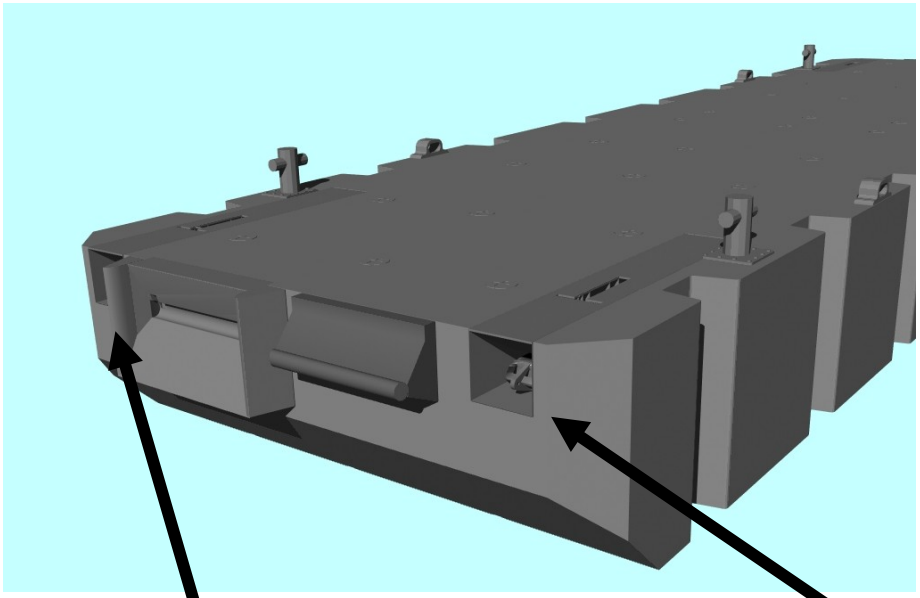


Chafing Pads

- 80’L x 24’W x 8’H
- Component of RRDF and Floating Causeway to accommodate watercraft interface

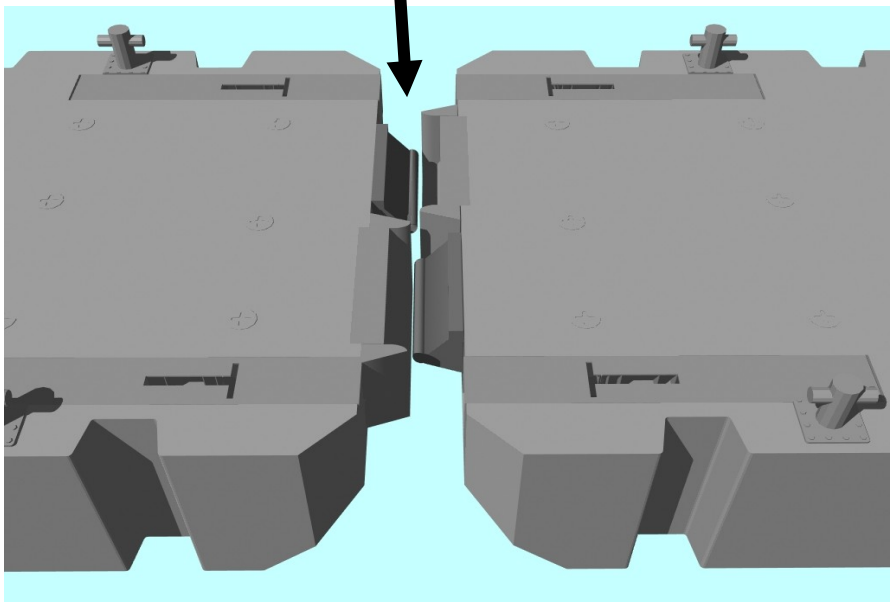
FLEXIBLE CONNECTOR SYSTEM

- Unhanded Flexible Connector System



Female Receptacle

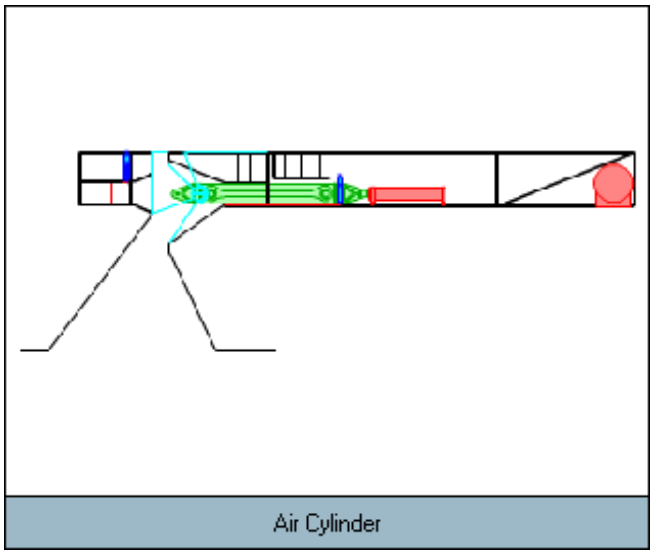
Unhanded Shear Connector/Alignment Guide

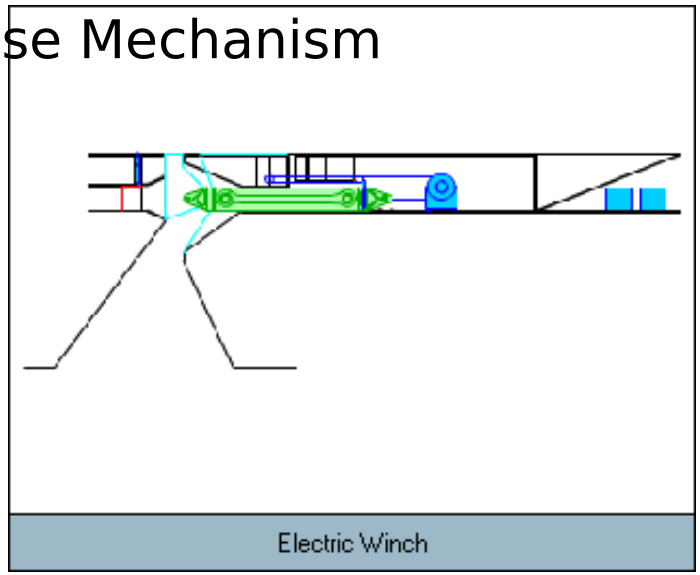


Flexor Connector Only installed on One Side on Each End

FLEXIBLE END CONNECTORS

- Two Competing Actuation Mechanisms
- Successful Design
- Replacing Sailors With Crowbars
- Remaining R&D Efforts Focused on Development of Remote Pneumatic Release Mechanism

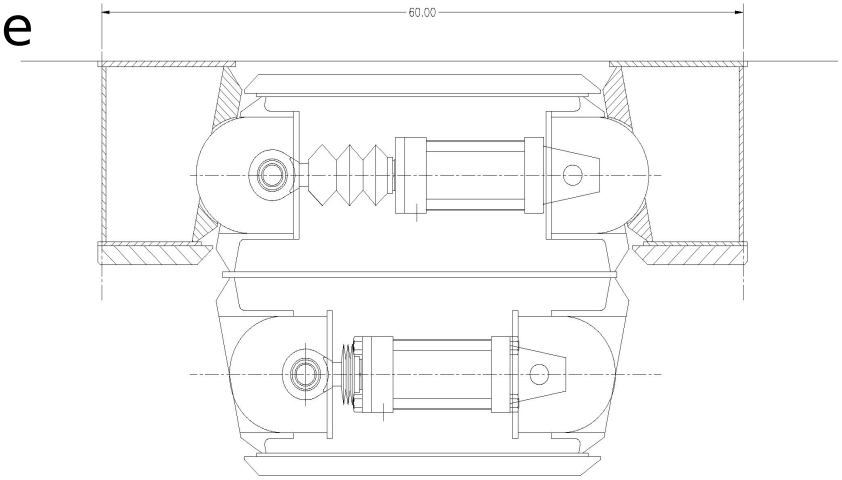




For the production system, we chose to use the pneumatic actuator, which connected in less than 5 seconds during testing.

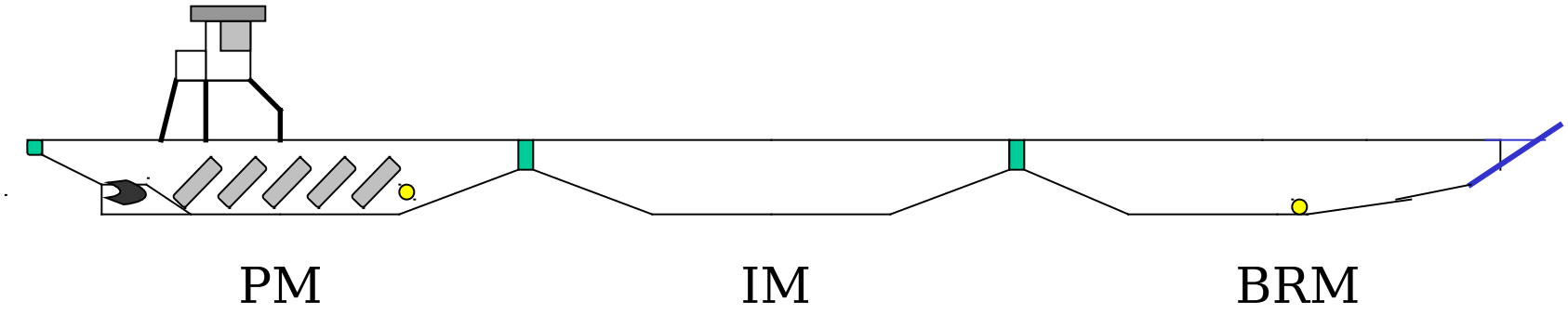
HYDRAULIC SIDE CONNECTOR DESIGN

- Mechanical Actuation Device
  - Too Slow
  - Underpowered
  - Significant Wear
- Hydraulic Actuation
  - Fast
  - Few Moving Parts
  - Requires Redesign of Connector and Side Slots
- Proceeding With Separate Side Connector Production Contract
  - Reduce Risk of Barge Contract
  - Involve Manufacturer in Final Design

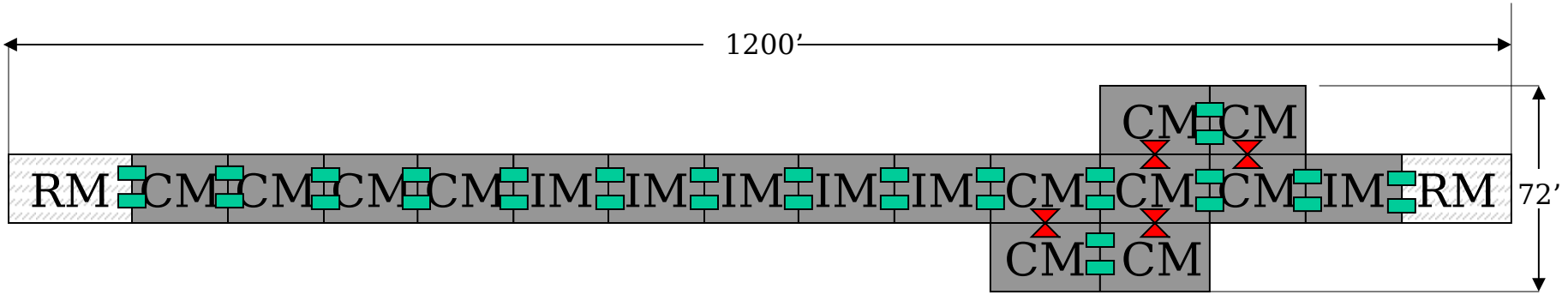


250 FOOT CAUSEWAY FERRY

- Standard Configuration
  - 1 Power Module
  - 1 Intermediate Module
  - 1 Bow Ramp Module
- Additional Intermediate Modules
  - Increase Cargo Capacity
  - Decrease Speed



1200 FOOT FLOATING CAUSEWAY



Flexible Connector

Rigid Side Connectors

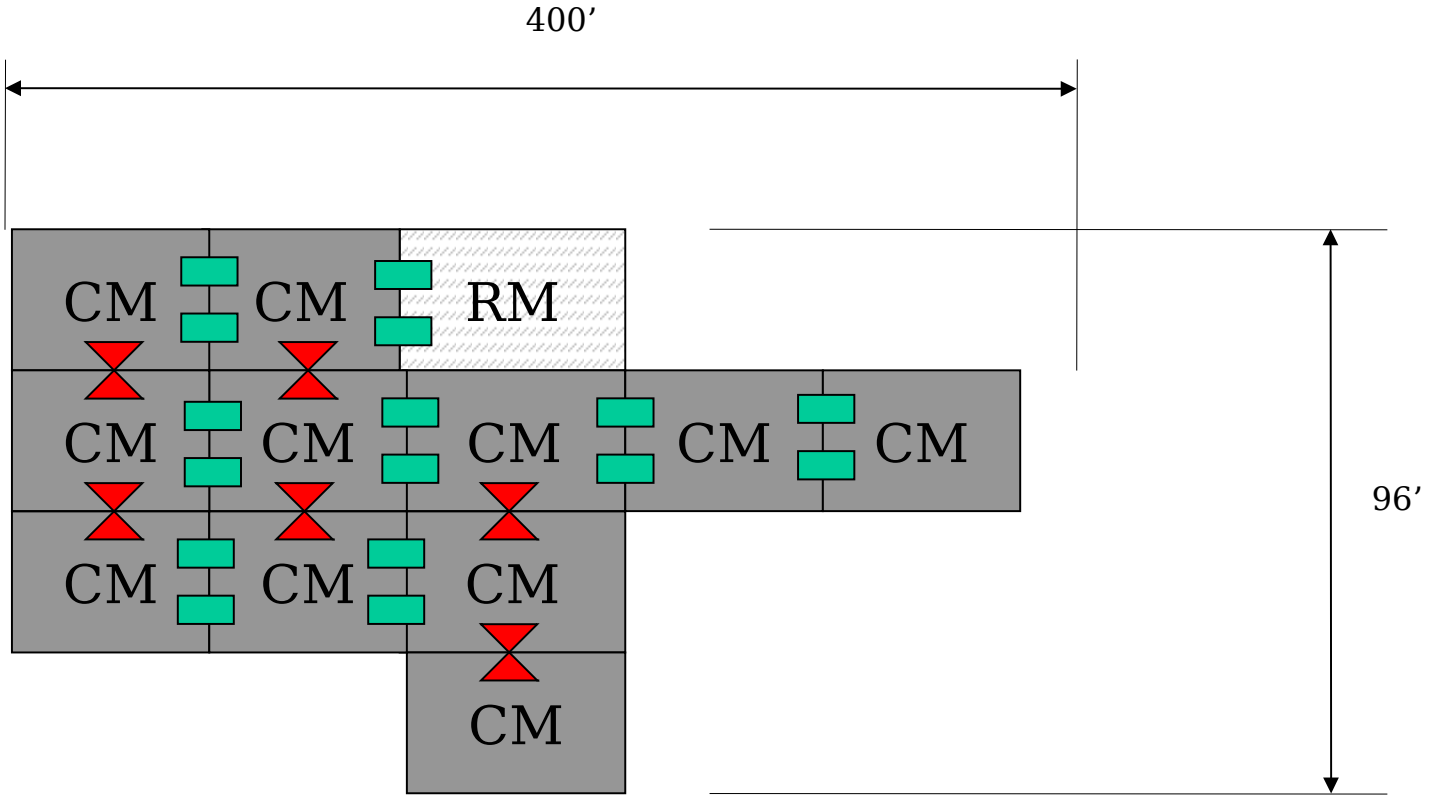
FLOATING CAUSEWAY

2 - RM- Ramp Module (80’)

6 - IM- Intermediate Module (80’)

11- CM - Combination Module (80’)

ROLL ON/ROLL OFF DISCHARGE FACILITY



Flexible Connector

Rigid Side Connector

RRDF

1- RM- Ramp Module (80’)

11- CM - Combination Module (80’)

INLS PROCUREMENT PLAN

- PCO at NAVFAC HQ
  - Full and Open Competition
  - Synopsis released DEC 02
  - Release RFP FEB 03
  - Bids close MAR 03
  - Award JUN 03
  - Firm Fixed Price for barge sections
  - Separate contract for Side Connectors
  - Best Value Awards
- Deliveries through FY 2010

INLS ACQUISITION PROCESS

- ACAT III
- NAVFAC Milestone Decision Authority
- Acquisition Program Documentation
  - MNS Approved
  - ORD In Final Approval Stage
  - TEMP Draft Awaiting ORD Approval
- Funds
  - Budget Currently Fully Funds Program
- FY02 Last R&D Year

PLATFORM ORDER SUMMARY

Platform	**FY03**	**FY04**	**FY05**	**FY06**	**FY07**	**FY08**	Total
WT	4	0	0	21	5	6	36
CF	2	0	0	27	12	12	53
RRDF	0	0	0	1	1	1	3
FC	1	0	0	2	0	0	3

INLS MODULE ORDER SUMMARY

Module	FY02	FY03	FY04	FY05	FY06	FY07	FY08	Total
WT	0	4	0	0	21	5	6	36
CF Power	0	2	0	0	27	12	16	57
Combination	0	11	0	0	33	11	13	68
CF Beach	0	2	0	0	27	12	14	55
Ramp	0	2	0	0	5	1	3	11
Intermediate	0	8	0	0	39	12	14	73
Total	0	29*	0	0	152	53	66*	300

* FY 08 Totals Include Rotational Pool Modules

INLS MILESTONE SCHEDULE

EVENT	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
MNS/ORD/TEMP Process	JAN 02 – May 03								
Milestone C Decision Brief			May 03						
Industry Review of Draft Spec		JUL 02 – NOV 02							
Issue RFP		FEB 03							
LRIP Contract Award			JUN 03						
OPEVAL				MAR 05 – JUN 05					
Delivery LRIP qty to EWTGPAC				JUL 05					
Full Rate Production Review				SEP 05					
Exercise FY06 Homeport Options				OCT 05					
Deliver Homeport Assets					AUG 06 – JUN 07				
Exercise FY06 Squadron Option				OCT 05					
Deliver to MPF Squadron 1						APR 07 – JAN 08			
Exercise FY07 Squadron Option					OCT 06				
Deliver to MPF Squadron 2					FEB 08 – APR 09				
Exercise FY08 Squadron Option						OCT 07			
Deliver to MPF Squadron 3						FEB 09 – JAN 10			
Full Operational Capability									JUL 10
	SYS DEV & DEMO			PROD & DEV LRIP		FULL RATE PRODUCTION			